

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
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PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing (day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference see form PCT/ISA/220		FOR FURTHER ACTION See paragraph 2 below
International application No. PCT/US2019/012139	International filing date (day/month/year) 03.01.2019	Priority date (day/month/year) 03.01.2018
International Patent Classification (IPC) or both national classification and IPC INV. G01N31/22 C04B28/14		
Applicant UNITED STATES GYPSUM COMPANY		

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA:  European Patent Office P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Fax: +31 70 340 - 3016	Date of completion of this opinion see form PCT/ISA/210	Authorized Officer Büscher, Olaf Telephone No. +31 70 340-0	
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Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:
 - ☒ the international application in the language in which it was filed.
 - ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1 (b)).
2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))
3. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing:
 - a. ☐ forming part of the international application as filed:
 - ☐ in the form of an Annex C/ST.25 text file.
 - ☐ on paper or in the form of an image file.
 - b. ☐ furnished together with the international application under PCT Rule 13ter.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.
 - c. ☐ furnished subsequent to the international filing date for the purposes of international search only:
 - ☐ in the form of an Annex C/ST.25 text file (Rule 13ter.1(a)).
 - ☐ on paper or in the form of an image file (Rule 13ter.1(b) and Administrative Instructions, Section 713).
4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	<u>4, 8</u>
	No: Claims	<u>1-3, 5-7, 9, 10</u>
Inventive step (IS)	Yes: Claims	
	No: Claims	<u>1-10</u>
Industrial applicability (IA)	Yes: Claims	<u>1-10</u>
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Re Item VIII

Certain observations on the international application

- 1 Claim 1 does not meet the requirements of Article 6 PCT because the matter for which protection is sought is not clearly defined. The claim attempts to define the subject-matter in terms of the result to be achieved, which merely amounts to a statement of the underlying problem, without providing the technical features necessary for achieving this result. In fact, claim 1 could state the quantity and the chemical nature of the "chelator" that is needed to achieve the result.
- 2 It is clear from the aforesaid that quantity and the chemical nature of the "chelator" are features that are essential to the definition of the invention. Since independent claim 1 does not contain these features it does not meet the requirement following from Article 6 PCT taken in combination with Rule 6.3(b) PCT that any independent claim must contain all the technical features essential to the definition of the invention.
- 3 The scope of claim 1 is directed towards a product that can be commercially available as pre-mixed ready-to-use mortar in bag. This product can have different functionalities and properties incorporated, such as having a color when bagged as ready-to-use powder, another color when being mixed with water and yet another color when set and dried. It is already inherently unclear to the reader, to which version of this product of claim 1 the scope of protection should be conferred to (Article 6 PCT). Claim 1 describes the functional behaviour of the product in use and does not define the product by technical product features (e.g. components and their quantities), although this could easily be done.
- 4 Claim 2 is not clear (Article 6 PCT), because it does not define the product of claim 1 by further technical product features, but merely gives a number of possible applications and uses of the product of claim 1. The same applies for claim 7 (Article 6 PCT).

- 5 The expression "incorporated herein by reference" used in the description is unclear (Article 5 PCT and PCT Guidelines, Part II, 4.26) and should be deleted.

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following documents:

- D1 US 2 678 280 A (NOYES STANLEY E ET AL) 11 May 1954
- D2 DATABASE WPI Week 201614 Thomson Scientific, London, GB;
AN 2015-81170Q & CN 105 136 785 A (SHANDONG XIWANG SPECIAL
STEEL CO LTD) 9 December 2015
- D3 WO 00/66508 A2 (DAP PRODUCTS INC [US]; KURP RONALD D [US])
9 November 2000 (US version cited in the application)
- D4 WO 2008/003672 A1 (BEISSIER [FR]; PFLANZ FREDERIC [FR])
10 January 2008
- D5 WO 2008/091184 A1 (MAXIT GROUP AB [SE]; MAIER WOLFRAM [DE];
BECKER MATTHIAS [DE]; SELINGE) 31 July 2008
- D6 US 4 524 828 A (SABINS FRED [US] ET AL) 25 June 1985

1 Article 33(1) PCT, Article 33(2) PCT & Article 33(3) PCT

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of independent claims 1, 6 and 10 and their independent claims 2, 3, 5, 7 and 9 is not new (Article 33(2) PCT), while for the subject-matter of dependent claims 4 and 8 no inventive step can be acknowledged (Article 33(3) PCT).

1.1 **Article 33(2) PCT**

- 1.1.1 **D1** discloses a building construction product (i.a. a material that is *suitable* for this purpose: PCT Guidelines Part II, Chapter 5.23) comprising a calcium compound (calcium sulfate) and a reversible chelator of calcium ions like Thymol Blue, Curcumin, etc. (col. 2, line 30-35, col. 3, line 26-66; examples 1-3; claims 1-14).

As the product of claim 1 contains identical "reversible chelators" as disclosed in the present application (compare to table 1 of application) it must inherently possess identical functionalities as the product of claim 1.

Claims 1, 2 and 5 are not new over D1 (Article 33(2) PCT).

- 1.1.2 **D2** discloses a building construction product (i.a. a material that is *suitable* for this purpose: PCT Guidelines Part II, Chapter 5.23) comprising a calcium compound (calcium oxide) and a reversible chelator of calcium ions like calconcarboxylic acid. As the product of claim 1 contains the same "reversible chelators" as disclosed in claim 3 of the application it must inherently possess identical functionalities as the product of claim 1.

Claims 1, 2, 3 and 5 are not new over D2 (Article 33(2) PCT).

- 1.1.3 **D3** discloses a building construction product comprising a calcium compound (limestone: calcium oxide/calcium carbonate) and a reversible chelator of calcium ions like phenolphthalein and thymolphthalein (page 1, line 5-23, page 1, line 31 - page 3, line 23, page 3, line 26 - page 8, line 10; examples 1-6; claims 1-18).

D3 also discloses a method of applying the patch repair composition by mixing the product with an indicator (page 2, line 8 - page 3, line 20), thereby obtaining a mixture with the desired behaviour/functionality and applying the mixture to a substrate (page 7, line 30 - page 8, line 3), wherein a change from a first color to a second color is inherent and hence inherently indicative of the mixture dryness (e.g. page 3, line 20: red to white).

As the product of claim 1 contains identical "reversible chelators" as disclosed in the present application (compare to table 1 of application) it must inherently possess identical functionalities as the product of claim 1 (thymolphthalein is another name for thymol blue).

Independent claims 1 and 6 and dependent claims 2, 5, 7 and 9 are not new over D3 (Article 33(2) PCT).

- 1.1.4 **D4** discloses a building construction product comprising a calcium compound (calcium sulfate or Portland cement) and a reversible chelator of calcium ions like phenolphthalein and thymolphthalein (page 1, line 4-22, page 2, line 8 - page 4, line 29, page 5, line 12-19, page 7, line 3 - page 12, line 3, page 12, line 8 - page 18, line 30; examples 1-2; table 1-3; claims 1-20).

D4 also discloses a method of applying the render by mixing the product with an indicator (example 1, table 1), thereby obtaining a mixture with the desired behaviour/functionality and applying the mixture to a substrate (page 18, line 24-30), wherein a change from a first color to a second color is inherent and hence inherently indicative of the mixture dryness (example 1: white to rose-violet to white).

D4 also discloses a method for monitoring a ready-mixed setting-type joint compound which comprises at least one retarder (page 5, line 15-19, page 14, line 26 - page 15, line 6; example 1: sodium gluconate), the method comprising formulating the ready-mixed setting-type joint compound with at least one indicator which comprises a reversible chelator of calcium ions (example 1) and monitoring the ready-mixed setting-type joint compound for a change in color, wherein the change in color is inherent and hence inherently indicative of premature activation of a setting reaction.

As the product of claim 1 contains identical "reversible chelators" as disclosed in the present application (compare to table 1 of application) it must inherently possess identical functionalities as the product of claim 1 (thymolphthalein is another name for thymol blue).

Independent claims 1, 6 and 10 and dependent claims 2, 5, 7 and 9 are not new over D4 (Article 33(2) PCT).

- 1.1.5 **D5** discloses a building construction product comprising a calcium compound (Portland cement) and a reversible chelator of calcium ions like phenolphthalein and thymolphthalein (page 1, line 5-25, page 2, line 28 - page 9, line 32; experiment 1-2; claims 1-23; fig. 1-6).

D5 also discloses a method of applying the render by mixing the product with an indicator (experiment 1), thereby obtaining a mixture with the desired behaviour/functionality and applying the mixture to a substrate (experiment 1; fig. 1), wherein a change from a first color to a second color is inherent and hence inherently indicative of the mixture dryness (experiment 1: red to faded red).

D5 also discloses a method for monitoring a ready-mixed setting-type joint compound which comprises at least one retarder (experiment 1; claim 1), the method comprising formulating the ready-mixed setting-type joint compound with at least one indicator which comprises a reversible chelator of calcium ions (experiment 1) and monitoring the ready-mixed setting-type joint compound for a change in color, wherein the change in color is inherent and hence inherently indicative of premature activation of a setting reaction.

As the product of claim 1 contains identical "reversible chelators" as disclosed in the present application (compare to table 1 of application) it must inherently possess identical functionalities as the product of claim 1 (thymolphthalein is another name for thymol blue).

Independent claims 1, 6 and 10 and dependent claims 2, 5, 7 and 9 are not new over D5 (Article 33(2) PCT).

1.2 Article 33(2) PCT

1.2.1 Dependent claims 4 and 8 do not appear to contain any additional features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT with respect to Article 33(3) PCT, because neither are surprising technical effects derivable from their characterising features, nor do these claims solve a technical problem in a non-obvious manner.

1.2.2 In addition, the feature of claim 4 is known and thus obvious from D6. The feature of claim 8 is a straight forward choice of an alternative chelator over the prior art. Calconcarboxylic acid is one of the most widely used calcium chelators. Its choice over prior art chelators is thus obvious.